Notice of Allowability	Application No.	Applicant(s)	
	10/521,179	HASEGAWA ET AL.	
	Examiner	Art Unit	
	Ling-Siu Choi	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the Amendment filed 09/11/2006*.

2. ☒ The allowed claim(s) is/are *1,3,5,6 and 8-11*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 09/11/2006
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

1. This Office Action is in response to the Amendment filed September 11, 2006. Claims 2, 4, and 7 were canceled and claims 8-11 have been added. Claims 1, 3, 5-6, and 8-11 are now pending.

Examiner's Amendment

2 An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CAR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Robert G. Mukai on November 22, 2006.

3. The application has been amended as follows:

Claim 1, line 15, change "20,000 or more" to --20,000 to 82,000--.

Allowable Subject Matter

4. Claims 1, 3, 5-6, and 8-11 are allowed.

5. The following is an examiner's statement of reasons for allowance:

The present claims are allowable over the closest references: Miller et al. (US 3,048,501), Giddings et al. (US 4,770,795), Hiroyuki et al. (JP 10-130338), and Sakamoto et al. (JP 62-132973).

Summary of claim 1:

A wear-resistant coating film comprising (A) (meth)acrylic copolymer resin and (B) an organic solvent wherein the (meth)acrylic copolymer having	
Tg1	determined by a rigid pendulum viscoelastometer
Tg2	determined by a differential scanning calorimeter (DSC)
Tg3	calculated from a monomer composition constituting the coating film
wear resistance	determined by a Taber abrasion testing method $\geq$ 80 times
Tg1	110-250°C
Tg2	110-250°C
Δ(Tg1-Tg3)	$\geq$ 30°C
Δ (Tg2-Tg3)	$\geq$ 30°C
and the (meth)acrylic copolymer resin has	
M_w	20,000-82,000
and is produced by radical polymerization of	
4-50 wt%	(meth)acrylic acid (a-1)
0.5-17 wt%	(meth)acrylic acid amide (a-2)
35-95.5 wt%	compound having a reactive unsaturated bond other than (a-1) and (a-2)

Summary of claim 5:

A coating solution comprising (A) (meth)acrylic copolymer resin and (B) an organic solvent	
the (meth)acrylic copolymer resin having	
M_w	20,000 or more
and being produced by radical polymerization of	
4-50 wt%	(meth)acrylic acid (a-1)
0.5-17 wt%	(meth)acrylic acid amide (a-2)
35-95.5 wt%	compound having a reactive unsaturated bond other than (a-1) and (a-2)

Miller et al. disclose a coating for paper, comprising water and a copolymer containing 6-10 wt% of at least one acid having the formula of CH_2= C(COOH)$(CH_2)_{n-1}H$ in which n = 1-2, 6-30 wt% of an amide of acid of the formula, and 60-84 wt% of at least lower alkyl ester of an acid of the formula in which the alkyl group has from 1 to 4 carbon atoms, wherein the viscosity average molecular weight of the copolymer is about 100,000 to about one million or higher (col. 2, lines 33-37; claim1). It is noted that $M_n < M_v \approx M_w$. Thus, Miller et al. do not teach or fairly suggest the wear-resistant coating film comprising (A) the claimed (meth)acrylic copolymer resin and (B) an organic solvent, wherein the (meth)acrylic copolymer resin comprises (meth)acrylic acid, (meth)acrylic acid amide, and compound having a reactive unsaturated bond other than (meth)acrylic acid and (meth)acrylic acid amide; M_w of 20,000-82,000; Tg1 of 110-250°C; Tg2 of 110-250°C; $\Delta(Tg1-Tg3) \geq 30°C$; and $\Delta (Tg2-Tg3) \geq 30°C$.

Giddings et al. disclose a drilling fluid comprising water and a copolymer containing acrylic acid, acrylamide, and sulfophenyl acrylamide, wherein the copolymer has a molecular weight in the range from 1,000 to 50,000 and the acrylamide and sulfophenyl acrylamide are present in a total amount of 5-50 mole percent (claim 1). However, Giddings et al. do not teach or fairly suggest the wear-resistant coating film comprising (A) the claimed (meth)acrylic copolymer resin and (B) an organic solvent, wherein the (meth)acrylic copolymer resin comprises (meth)acrylic acid, (meth)acrylic acid amide, and compound having a reactive unsaturated bond other than (meth)acrylic acid and (meth)acrylic acid amide; M_w of 20,000-82,000; Tg1 of 110-250°C; Tg2 of 110-250°C; $\Delta(Tg1-Tg3) \geq 30°C$; and $\Delta (Tg2-Tg3) \geq 30°C$.

Hiroyuki et al. disclose a copolymer for coating, comprising the contact of 920 g of methyl methacrylate, 555 g of ethyl acrylate, 125 g of 2-ethylhexyl acrylate, 125 g styrene, 250 g of 2-hydroxyethyl acrylate, 412.5 g of N-butoxymethyl acrylamide, and 125 g of acrylic acid, wherein the copolymer has weight average molecular weight of 5,000-100,000 (abstract; [0038]). However, Hiroyuki et al. do not teach or fairly suggest the wear-resistant coating film comprising (A) the claimed (meth)acrylic copolymer resin and (B) an organic solvent, wherein the (meth)acrylic copolymer resin comprises (meth)acrylic acid, (meth)acrylic acid amide, and compound having a reactive unsaturated bond other than (meth)acrylic acid and (meth)acrylic acid amide; M_w of 20,000-82,000; Tg1 of 110-250°C; Tg2 of 110-250°C; $\Delta(Tg1-Tg3) \geq 30°C$; and $\Delta (Tg2-Tg3) \geq 30°C$.

Sakamoto et al. disclose a coating resin composition comprising a copolymer

having glass transition point between 60 and 110°C; number average molecular weight of 5,000 to 50,000 and being obtained by copolymerizing (A) 0.5-15 wt% of a monomer having carboxylic group[(meth)acrylic acid], (B) 50-90 wt% of methyl methacrylate, and (C) 0-49.5 wt% of another copolymerizable monomer [alkyl (meth)acrylate] (abstract). However, Sakamoto et al. do not teach or fairly suggest the wear-resistant coating film comprising (A) the claimed (meth)acrylic copolymer resin and (B) an organic solvent, wherein the (meth)acrylic copolymer resin comprises (meth)acrylic acid, (meth)acrylic acid amide, and compound having a reactive unsaturated bond other than (meth)acrylic acid and (meth)acrylic acid amide; M_w of 20,000-82,000; Tg1 of 110-250°C; Tg2 of 110-250°C; Δ(Tg1-Tg3) $\geq$ 30°C; and Δ (Tg2-Tg3) $\geq$ 30°C.

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114.

LING-SUI CHOI
PRIMARY EXAMINER

November 25, 2006